ATRB
V-22 Status Update

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MV-22 System Description
Block A

NACELLE REDESIGN (Safe and Operational)

- Capability improvements
  - Lighting
  - Improved cargo handling
  - OPEVAL 1 fast rope bracket
  - Cockpit door (into cabin)
- R&M improvements
  - Mini-Mark IV
  - Click Stud
  - Slip Ring
  - Flat Panel Displays
  - -115 Swashplate Actuator
  - Blade Fold Improvements
  - EAPS Improvements
  - VFG Upgrade

IMPROVED IETMs

- Training System Upgrade
- Flight Manual Upgrade

SOFTWARE UPGRADES

- WCA improvements
- Control Power Mgt Sys fix
- Primary Flt Control Sys
- JASS 2.6 (98 changes)
- VMS 12.1
- LWINS V-7
- DIGMAP V-19
- FMU, VSLED, FADEC
- APU-ECU
- Cost reduction changes
- Other Minor Mods

Operationally Deployable Aircraft

MV-22 System Description
Block B

ENHANCED MAINTAINABILITY NACELLE (Lot 9)

- Capability Improvements
  - Retractable fuel probe
  - Avionics / Comm / Nav upgrades
  - Production icing system
  - Ramp gun
  - Electric hoist
  - Wing Auxiliary Tanks
  - Mission Auxiliary Tanks
  - Cargo hook door actuator upgrade
  - Radar altimeter sling load interference modification
  - Wing Stow Improvements
  - Ramp Fast Rope Fitting

- Continued training system upgrade
- IETMs update
- Flight manual update

- R&M improvements
  - Windscreen Upgrade
  - Parts obsolescence
    - Interface Units
    - FLIR SEU
    - MAGR2000
    - Display Electronics Unit
    - 7 other items
- Cost reduction changes

Growth in Suitability and Effectiveness

MV-22 System Description
Block C

Preplanned Product Improvements

- Flight incident recorder
- Fuel dump modifications
- Weather radar
- ECS upgrade
- Wheel well fire suppression
- Oil cooler inlet screen

- ALE-47 TCL switch feel
- Mid-wing gear box impending bypass indicator
- Improved slip ring for icing & service life
- Improved reliability cabin dome lights

- Project specific flight testing
- Main landing gear brake redesign
- Tail position light redesign

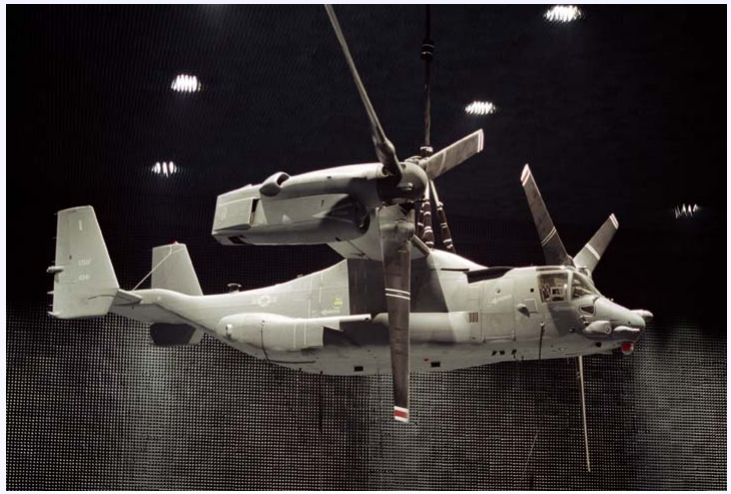
Requirements IPT Staffing and POM-06 Initiative

CV-22 System Description

Block 0

- Multi-Mode TF / TA radar
- SIRFC

- Other capability improvements
  - Simultaneous T/R on 4 radios
  - 5 USAF expendables buckets
  - Flight engineer seating accommodation
  - Multi-mission advanced tactical terminal



MV-22 / CV-22 Commonality	
Airframe	90%
Avionics	48%
Propulsion	100%

- Other capability improvements
  - Computer and digital map upgrades
  - 900 gallons of additional internal fuel + cabin aux tanks
  - Dedicated electronic warfare display

SIRFC and MMR

CV-22 System Description

Block 10

- DIRCM

- Other capability improvements
  - Silent shield
  - Dual digital map display
  - GANS / GATM
  - Flight engineer's data display
  - Improved flight engineer's seat
  - LPI / LPD radar altimeter

MV-22 / CV-22 Commonality

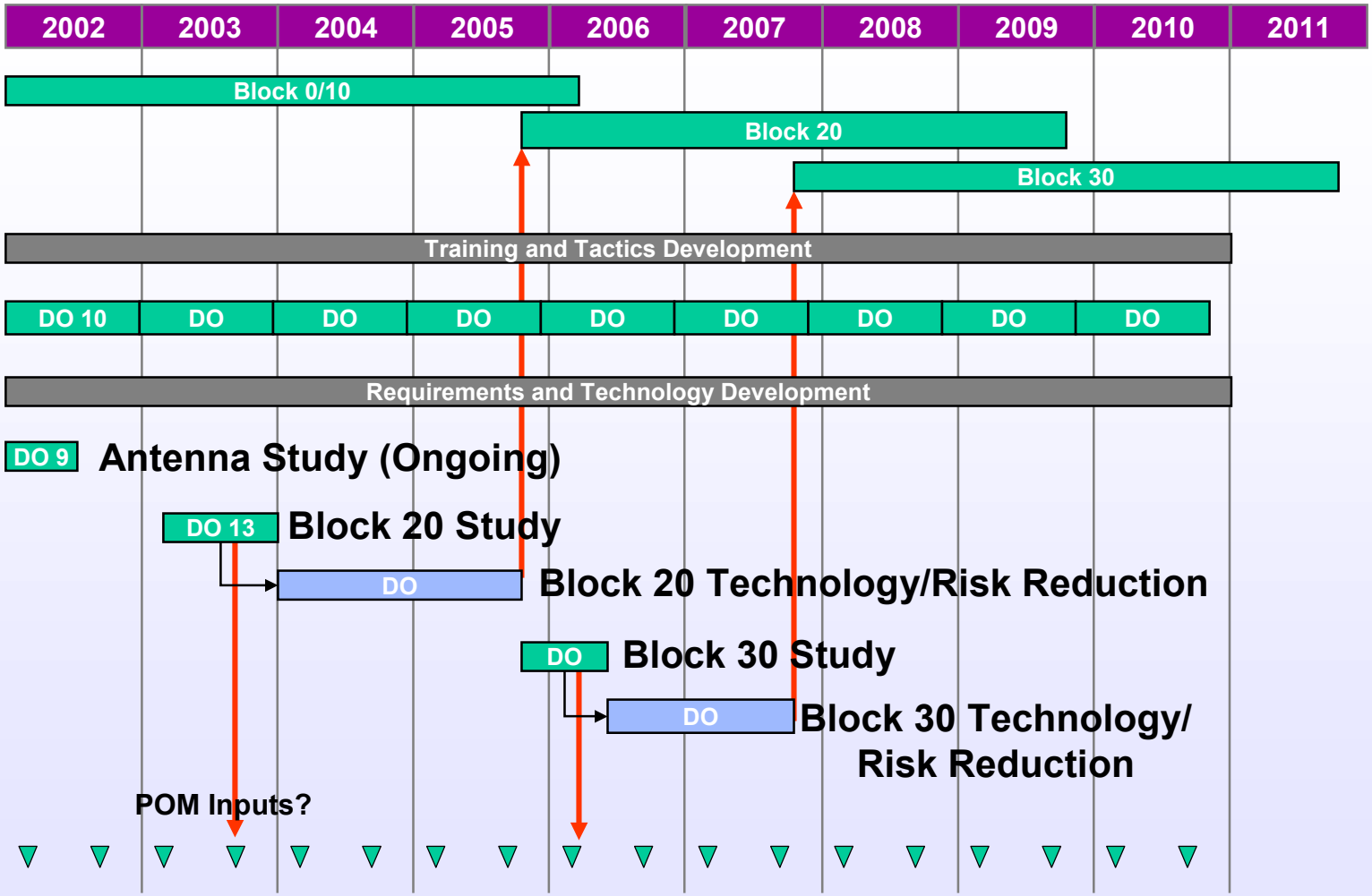
Airframe	88%
Avionics	23%
Propulsion	100%

- Other capability improvements
  - TCAS
  - 2nd forward firing ALE-47 dispenser
  - ALE-47 control head relocation
  - Troop commander's situational awareness
  - Improved navigation
  - Lower blade antenna

Protection from IR threats

V-22 Joint Strategic Plan

Big Picture Strategy



Study Overview

Study Objective

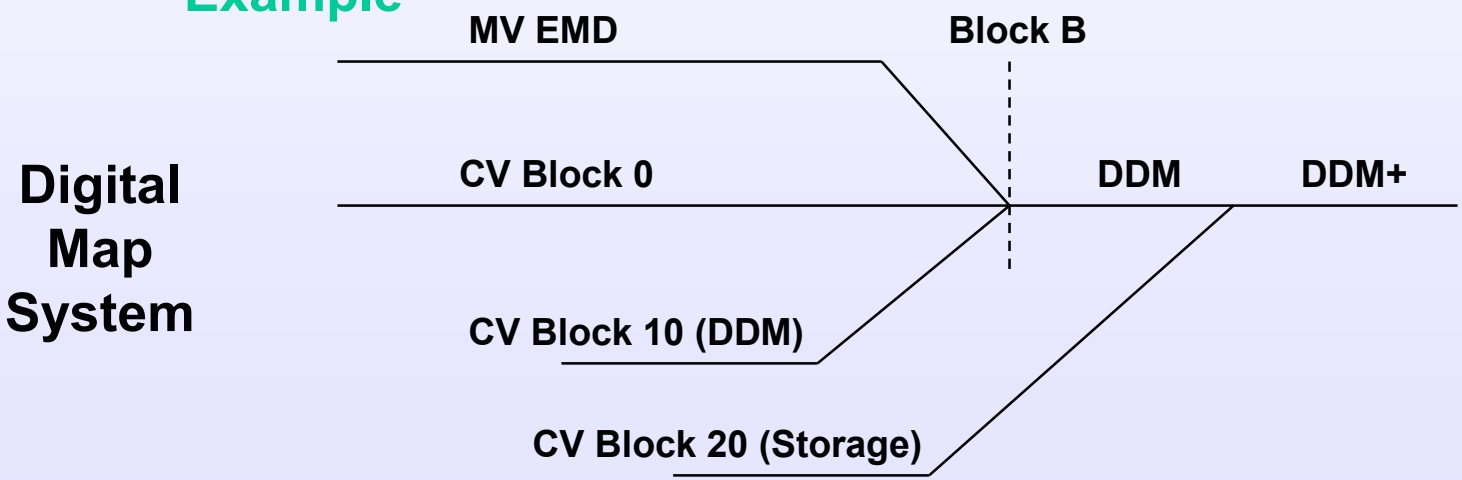
- **Develop a V-22 Joint Strategic Plan**
  - CV-22 Technology Insertion Roadmap
  - Organized by blocks beginning with Block 20 and continuing to the end of the program life (planned for 20 years)
  - Top-level acquisition strategy
- **Activities include development of:**
  - A comprehensive definition of Block 20 upgrade candidates
  - ROM cost and schedule estimates
  - Associated risk assessments
  - Related impacts
  - A product-oriented WBS, IMP, and IMS
  - Budgetary plans for DMS/VV, risk mitigation, and periodic technology upgrades
- **Subsequent block planning will be developed with less fidelity**

Strategic Planning

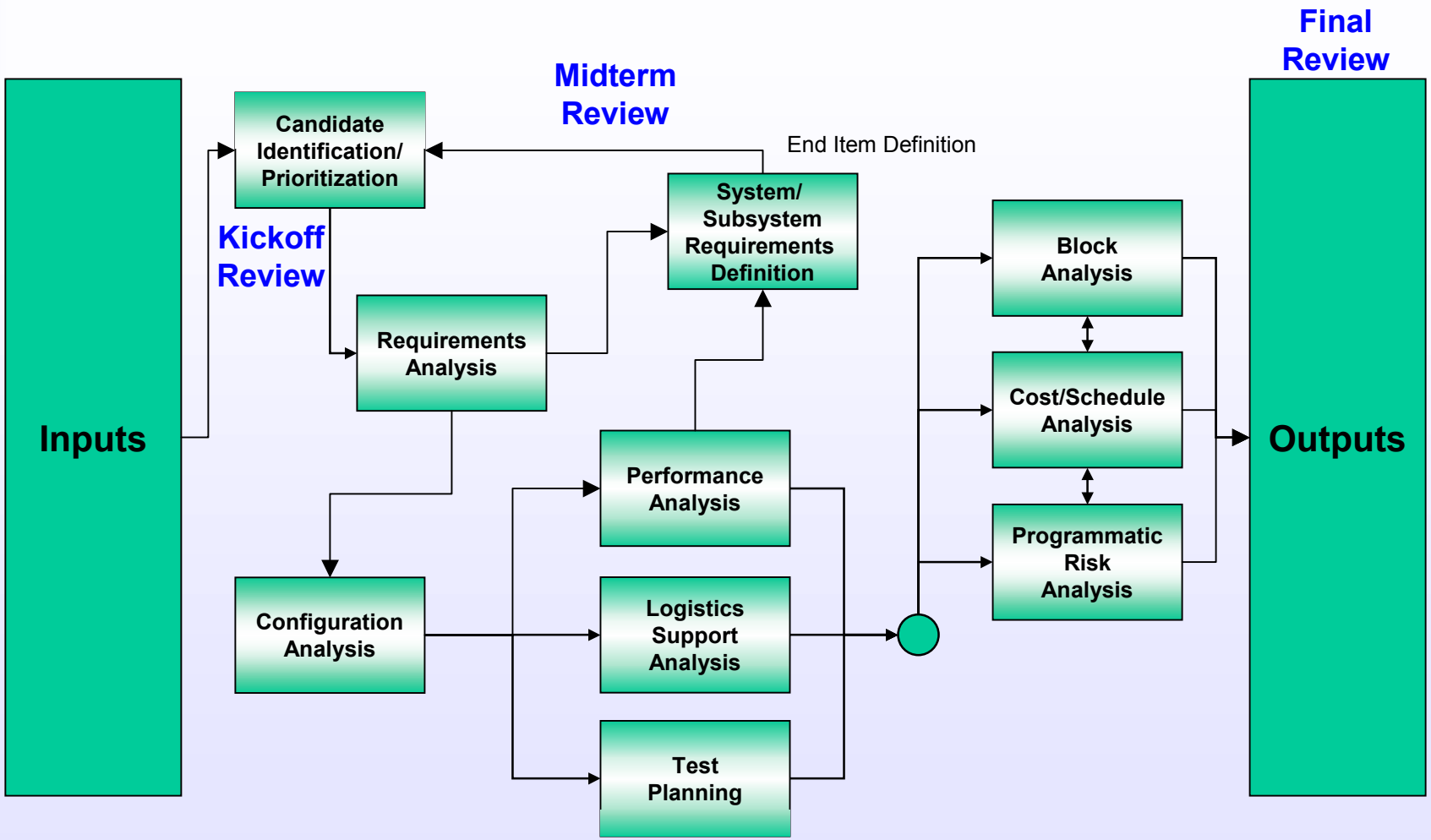
- **V-22 Architecture of the Future**
  - Must Address:
    - Technology Upgrades
    - Open System Architecture
    - DMS/VV/Obsolescence
  - Will drive longer range technology activities

MV Plan is TBD

Example



Top Level Plan



Detailed Block Charts

Study Inputs

- **Online Document Repository**
  - Osprey Web ✓
- **USAF/SOCOM Funding Profile**
- **Upgrade Candidates**
  - Configuration Matrix ✓
  - Prior requirements ✓
  - ORD Changes
- **Planned MV Changes** ✓
- **Fleet User Input**
  - Functional requirements
  - Operational prioritization ✓
- **Existing IMP/IMS**
  - Flight Test Schedule ✓
  - Production Schedule ✓
- **Prior Estimates**
  - Bell-Boeing ROM inputs ✓
- **Separately Developed Technology**

✓= Got it

Study Outputs

- **V-22 Joint Strategic Plan**
  - Block Upgrade Roadmap
  - Technology Roadmap
- **TOC Estimate**
- **Weight/Drag/KPP Impact Assessment**
- **Logistics Impact Assessment**
- **Program Schedule**
- **Risk Assessment**
- **Technology Roadmap**
- **Recommended CWBS**

"Smart" Approach to Open System Architecture Migration

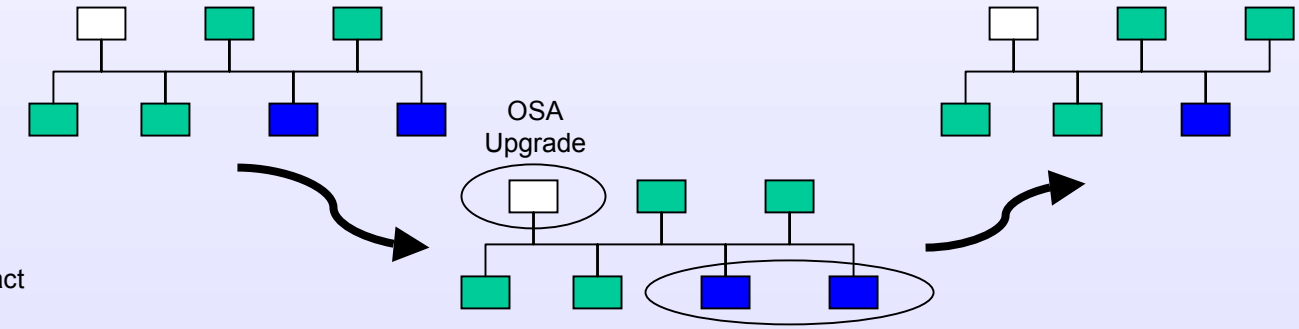
Sources:
Block Upgrade Studies
Cost/Weight Reduction Initiatives
V-22 Program Variants

Architecture Concepts to be Developed Under Study

Architecture Of The Future

New Requirements Identified → **System Impacts Identified** → **Box-Level Migration Path Developed** → **Funded EMD Program**

Incremental Approach



Little or No Impact

Significant Impact

Significant Impact with merger potential

Immediate Examples

- **AMC Upgrade**
  - Heart of future architecture
  - GANS/GATM could drive SW upgrade requiring rearchitecture
  - OSA included to mitigate future obsolescence
  - MV/CV common development
- **HUD Upgrades**
  - Could drive merger of HUD with DEU in an OSA box
- **DMS Upgrades**
  - Could drive upgrade to OSA
- **Interface Units**
  - Pursue Cost/Weight through OSA design
  - Facilitates OSA architecture